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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/575,349	05/19/2000	Michael J. D'Elia	AMDA.474PA	1541

7590 06/24/2003

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EXAMINER
PERALTA, GINETTE

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 06/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/575,349	D'ELIA ET AL.	
	Examiner	Art Unit	
	Ginette Peralta	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 18-21, 26, 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Okumura et al. (U. S. Pat. 5,015,330).

Okumura discloses in Fig. 8 a system for forming a coating on a surface of a semiconductor wafer in a CVD arrangement, the system comprising injector means 92 for supplying a uniform supply of gas to the surface of the wafer, the surface being in a zone of the CVD arrangement that exhibits a depleted gas supply absent the injector; and means for using the supplied gas in combination with selected reactants to deposit a coating on the wafer.

With regards to claims 20 and 21, Okumura discloses that the arrangement is provided with various pairs of electrodes in order to supply gas in a non-uniform or uniform manner, thus the gas can be supplied in different quantities to different zones of the CVD arrangement compensate for a gas depletion rate.

Okumura further discloses depositing a coating having uniform thickness and adjusting the injector to maintain a uniform gas supply.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al. (U. S. Pat. 5,015,330) in view of Jeng et al..

With regards to claims 22, 23, 24, 25, Okumura discloses the claimed invention with the exception of the use of dichlorosilane and ammonia, and depositing an anti-reflective coating.

Jeng et al. teaches a method for forming a coating on a surface that comprises supplying a gas to a chamber, and using the supplied gas in combination with selected reactants and depositing a coating on the wafer, wherein the gas includes ammonia and dichlorosilane, wherein depositing a coating on the wafer includes depositing an anti-reflective coating (ARC) having uniform optical properties, wherein the ARC has a k value between 0.3 and 0.5, and the method further includes performing photolithography using the ARC.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to introduce reactants like ammonia and dichlorosilane, and to

deposit an anti-reflective coating as Jeng et al. teaches with the CVD arrangement of Okumura for the purpose of depositing a uniform film over a semiconductor substrate and to form high density integrated circuits.

5. Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura in view of Bartholomew et al..

Okumura discloses the claimed invention with the exception of providing a gas concentration detector in the CVD arrangement and adjusting the gas injector in response to a detected concentration.

Bartholomew et al. teaches a method that comprises adjusting a gas injector in a CVD arrangement by providing at least one gas concentration detector in the CVD arrangement in the form of a sensor that measures the flow characteristics of at least one of the gases in the gas flow path (Col. 4, ll. 48-55), and in response, to the detected characteristic, the gas injector is adjusted, wherein the detector is removed from the CVD arrangement after detecting the concentration of the supplied gas.

Thus, it would have been obvious to one of ordinary skill in the art to use a CVD arrangement that would control the introduction of the gases according to the concentration or other characteristics of the gases for the disclosed intended purpose of Bartholomew et al. of controlling the reaction as the flow rate of gases affect the extent and uniformity of the deposition reaction in the invention of Okumura.

Response to Arguments

6. Applicant's arguments filed 4/23/03 have been fully considered but they are not persuasive.

In regards to applicant's argument that Okumura et al. does not show a uniform supply of gas to the surface of a wafer, and that at column 6, Okumura et al. discloses that in the chamber, the plasma and process gas are distributed unevenly, it is noted that Okumura discloses the use of the rotary shaft to further improve the uniformity of the etching (col. 6, ll. 28-33), that the injector can inject the gas almost uniformly between the wafers, and then discloses that the unevenness of the plasma results from the unevenness of an electric field generated in the reaction container by the high frequency signal supplied, thus the uneven distribution of the plasma is not due to the injector, and as Okumura et al. discloses the injector injects the gas uniformly between the wafers, and the rotary shaft just further improves the uniformity.

In regards to applicant's argument that the electrodes relied upon are not related to the embodiment of Fig. 8, it is noted that in Fig. 8, gas discharge holes 91a and 92a are used to supply gas to the surface in different quantities, and as the holes are located in different zones of the CVD arrangement, thus different quantities are supplied to different zones.

In regards to applicant's argument that there is no motivation to combine the references of Bartholomew et al. and Okumura et al. since Bartholomew et al. is directed to maintaining a substantially constant exhaust flow rate in various regions, whereas applicant's invention is directed to delivering a uniform supply of gas to a zone in a

CVD arrangement, it is noted that Bartholomew et al. is relied upon for the teachings of adjusting a gas injector in a CVD arrangement by providing a gas concentration detector, even though the detector may be situated to control the exhaust gas flow rate, the reference is combinable as it relates to a method and apparatus of controlling a uniform gas flow which is the same purpose of the applicant and of Okumura et al..

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ginette Peralta whose telephone number is (703)305-7722. The examiner can normally be reached on Monday to Friday 8:00 AM- 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703)308-49188-4918. The fax phone

numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

GP
January 27, 2003

SU